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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/736,985	12/17/2003	Sung-ha Kim	Q78914	6456
23373	7590	07/14/2005	EXAMINER	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			SEVER, ANDREW T	
			ART UNIT	PAPER NUMBER
			2851	

DATE MAILED: 07/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/736,985

Applicant(s)

KIM ET AL.

Examiner

Andrew T. Sever

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 June 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4, 13 and 17-27 is/are pending in the application.
- 4a) Of the above claim(s) 25 and 26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 13, 17-24 and 27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>6/2005</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Election/Restrictions*

1. Claims 25 and 26 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim.

Election was made **without** traverse in the reply filed on 3/7/2005.

It is premature to remove the withdrawn status from these claims. Although they are dependent on claim 17 which was part of the elected species (I), they do not read on that species and therefore until a generic claim is found allowable they will remain withdrawn.

### *Information Disclosure Statement*

2. The information disclosure statement filed 6/7/2005 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because The first citation to Kanayama et al. includes an invalid document number. It has been placed in the application file, but the information referred to therein has not been considered as to the merits. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609 ¶ C(1).

For applicant's convenience the proper number is being cited in an attached PTO 892. It will be considered for rejections and any rejection based on it will be made final.

Applicant is advised to review it before making any amendments.

*Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1 and 4 are rejected under 35 U.S.C. 102(e) as being anticipated by Ishihara et al. (US 6,535,256.)

Ishihara teaches in figure 1 a light pipe (7) comprising:

A first dichroic prism having a first mirror plane, the first mirror plane inclined with respect to the axis of incident light and reflecting a first color beam among white light while transmitting the other color beams (Blue)

A second dichroic prism having a second mirror plane, the second mirror plane inclined with respect to the axis of incident light and reflecting a second color beam among the color beams transmitted by the first dichroic prism while transmitting the other color beams; (the second is red) and

A third dichroic prism having a third mirror plane, the third mirror plane inclined with respect to the axis of incident light and reflecting a third color beam transmitted by the second dichroic prism (the third is green),

Wherein each of the first, second, and third dichroic prisms includes additional reflective planes other than the first, second, and third mirror planes, the additional reflective planes reflect light that is incident at a predetermined angle due to a difference between the additional refractive indices of each of the reflective planes and the outside so that the incident light travels within the first, second, and third color dichroic prisms, and the additional reflective planes form the exteriors of the first, second, and third dichroic prisms and contribute to reducing loss in the first, second, and third color beams.

(Ishihara teaches in column 4 lines 39-61 that the light pipe is made of four prisms (three dichroic prism and an end cap cemented to each other.) The edges (external faces) of the cubes form an air glass interface, this interface makes the glass on the surface of the prisms partially reflective (total internal reflectivity) light that intercepts the edge of the glass is bent and for some angles reflected. See any basic optics book.)

*With regards to applicant's claim 4:*

As described in column 4 lines 39-61 and as is evident from inspection the mirror planes are at different angles.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishihara as applied to claims 1 and 4 above, and further in view of Okuyama (US 6,406,149.)

As described in more detail above Ishihara teaches a projection system which has a light pipe which among other things comprises first through third dichroic prisms. Ishihara teaches a means for making the light polarized comprising of a prism 5 and special materials making the lens array 8 instead of two polarization beam splitters and a ½ wave plate. Okuyama teaches in figure 3 teaches first and second beam splitters 7a and 7b with ½ wave plate 7c before further optics, Okuyama teaches in column 1 lines 22-56 that by

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using such a polarizer little light is wasted by making the light polarized and in column 2 lines 11-16 the particular embodiment of figure 3 is taught to be smaller than other prior art polarizers and does not require other parts of the projector to be made of special materials. Given these advantages it would have been obvious to one of ordinary skill in the art to use Okuyama's polarization beam splitters in the projection device of Ishihara along with Ishihara's light pipe.

*With regards to applicant's claim 3:*

Okuyama teaches a condensing lens (3) before the polarized beam splitter to condense the light onto the beam splitter.

8. Claims 13, 17, 18, 21-24, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishihara as applied to claim 1 and 4 above, and further in view of Lambert (US 6,288,815.)

As described in more detail above Ishihara teaches a light pipe which is part of a color illumination system/projection system comprising of three dichroic prisms. Ishihara does not teach the use of a scrolling unit to change the path of the separated beams and periodically scroll it on the imager. Lambert teaches in column 1 lines 26-40 as well as column 2 lines 6-45 that in systems such as Ishihara it is ideal to scan or scroll the light across the imager. Lambert teaches such a scanning system in figure 5 (parts 20, 22, and 23 including 24 and 25), which receives the separated light and scrolls it across the imager. The scanning system comprises of a first focusing lens (22) and three moving

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lens arrays (20). Lambert teaches in column 5 that this structure allows for a better scanning function without non-linearities found in other prior art scanning systems.

Accordingly given all the advantages taught by Lambert for utilizing Lambert's scrolling unit it would have been obvious to one of ordinary skill in the art at the time the invention was made to include it in the color illumination system of Ishihara.

*With regards to applicant's claim 17:*

The scrolling mechanism of Lambert comprises of a first focusing lens, a scrolling lens, a second focusing lens (13) and Ishihara teaches a fly-eye lens array (8) delivering the beams to a light valve (9) which then reflects image light towards a projection lens unit (11).

*With regards to applicant's claim 18:*

The mirrors of Ishihara are at different angles with respect to each other see the above 102 rejection of claim 4.

*With regards to applicant's claim 21:*

Lambert teaches that the first and second focusing lenses are cylindrical lens in column 9 lines 48-56.



*With regards to applicant's claim 22:*

Lambert teaches an alternative embodiment where first and second focusing lenses are Fresnel lenses (a type of lens utilizing diffraction elements on a planar sheet.) See line 46 of column 5 of Lambert.

*With regards to applicant's claims 23 and 24:*

See column 5 lines 51-67.

*With regards to applicant's claim 27:*

The post-focus lens can be considered a relay lens.

9. Claims 19 and 20 rejected under 35 U.S.C. 103(a) as being unpatentable over Ishihara in view of Lambert as applied to claims 13, 17-18, 21-24, and 27 above, and further in view of Okuyama.

As described in more detail above Ishihara in view of Lambert teaches a projection system which has a light pipe which among other things comprises first through third dichroic prisms. Ishihara teaches a means for making the light polarized comprising of a prism 5 and special materials making the lens array 8 instead of two polarization beam

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splitters and a  $\frac{1}{2}$  wave plate. Okuyama teaches in figure 3 teaches first and second beam splitters 7a and 7b with  $\frac{1}{2}$  wave plate 7c before further optics, Okuyama teaches in column 1 lines 22-56 that by using such a polarizer little light is wasted by making the light polarized and in column 2 lines 11-16 the particular embodiment of figure 3 is taught to be smaller than other prior art polarizers and does not require other parts of the projector to be made of special materials. Given these advantages it would have been obvious to one of ordinary skill in the art to use Okuyama's polarization beam splitters in the projection device of Ishihara in view of Lambert.

*With regards to applicant's claim 20:*

Okuyama teaches a condensing lens (3) before the polarized beam splitter to condense the light onto the beam splitter.

### ***Response to Arguments***

10. Applicant's arguments filed 6/22/2005 have been fully considered but they are not persuasive.

Applicant argues that the additional language added to the claims that the prisms include additional reflective planes other than those of the dichroic interface differentiate applicant's claims from the cited prior art of Ishihara et al. A review of applicant's claim, however, reveals the properties of a plane which can be considered a reflective plane: namely that light directed at a predetermined angle due to difference between the refractive indices of the planes and the outside environment will reflect (all other angles

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will presumably be transmitted outside the glass.) Accordingly applicants claimed requirement for being reflective is that of total internal reflection and this inherently can occur with any glass/air interface (another example is water/air interface). No special coating or shape is required for this to occur and accordingly the planes making up the external sides of the beamsplitting cubes can be considered to be additional reflective planes as they reflect light that is incident at a predetermined angle (critical angle) due to a difference between the refractive indices of each of the additional reflective planes. Accordingly the rejection has been repeated with some modifications to reflect applicant's new claim language. The rejection is made final.

### *Conclusion*

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew T. Sever whose telephone number is 571-272-2128. The examiner can normally be reached on 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on 571-272-2258. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AS



**JUDY NGUYEN**  
**SUPERVISORY PATENT EXAMINER**